The Economic Consequences of GASB Financial Statement Disclosure

1. Introduction

An important but unanswered question in the literature on governmental accounting is whether changes in how items are reported on financial statements have real economic consequences. In a frictionless world, the reporting of an item on the municipalities' financial statements should have no effect unless it provides new information. However, research on publicly traded corporations suggests that financial statement treatment can influence how managers operate the firm. For example, the recent move towards a new revenue recognition standard has led some firms to change their terms of sale to ensure comparability in reported revenue over time. Even though a significant literature in public economics has focused on the budgeting process, we suggest that municipal managers are potentially similarly affected by changes in financial reporting. More specifically, we suggest that the disclosure and recognition of a new obligation (asset) will increase the manager's awareness of this obligation (asset), and encourage the manager to make operational changes that incorporate this information. Importantly, we suggest that this is the case even though there is in fact no new obligation or asset—rather, the obligation or asset has always existed, the only change is how it is disclosure and reported on the municipality's financial statements. Understanding whether there are effects in the governmental setting is especially important given the recent increase in GASB pronouncements and the important role that GASB statements play in municipal debt markets.

GASB 68 provides a unique setting to examine the effects of disclosure for local governments. The standard focuses on the reporting of pension obligations, which are an economically important item for many municipalities. More important, while this statement required the recognition and disclosure of the entities' net pension deficit, it did not apply uniformly across all entities. In particular, municipalities that participate in shared plans with

their state disclosed nothing in their financial reports with respect to pension obligations prior to GASB 68. Rather, pension obligations associated with these entities were disclosed only at the state level, even though each individual municipality is ultimately responsible for the future funding of its obligation. In contrast, municipalities with agency-type (or self-administered) plans disclosed the net pension deficit pre-GASB 68 in the supplementary information in their annual reports. This difference in pre-GASB 68 reporting allows us to isolate the effect of financial statement disclosure by comparing the changes in several economic constructs for municipalities that participate in shared plans with those that participate in agency-type plans.

We employ a difference-in-differences (DD) research design that compares economic outcomes for municipalities that participate in shared plans with those that participate in agency-type plans. The economic outcomes we consider are broad measures of revenues, expenses and the number of employees. We analyze these variables because they broadly capture the economic behavior of the municipality. Conceptually, our use of municipalities with agency-type plans allows us to control for general macroeconomic trends in revenues, expenses, and number of employees. Our analyses use a broad sample of 502 unique municipalities from across 47 states, representing the full list of municipalities whose population is in excess of 100,000 or is one of the three largest municipalities in a particular state. Our data is primarily hand collected from each municipality's annual audit report or comprehensive annual financial report.

We find significant differences in how municipalities with shared plans respond to GASB 68 relative to those with agency-type plans. More specifically, we find that those with shared plans have a differential reduction in salary expenses, welfare expenses and employee headcount. This effect is entirely driven by those entities recording a net pension liability. In fact, when we split our sample according to whether there is an asset or a liability recorded, we find

complementary results. In other words, for those municipalities where GASB 68 generated an asset, we observe an increase in expenses suggesting that the municipalities were behaving as if they had additional resources. In contrast, for those municipalities where GASB 68 generated a liability, we observe a decrease in expenses suggesting that the municipalities were behaving as if they had fewer resources. In addition, when we use a continuous measure of the net pension liability, we find that the expense reductions are greater for municipalities where the net pension liability recognized is greater. Collectively, these results provide strong evidence that the new disclosure and recognition requirements under GASB 68 had real effects on municipal operations.

Next, we conduct some exploratory analyses to understand the mechanism that is driving the change in behavior. We suggest that the pressures on municipal managers to curtail expenses when faced with disclosing and recognizing the net pension liability could be driven by debt market forces. More specifically, credit rating agencies or debt market participants may encourage certain municipalities to increase fiscal responsibility in response to GASB 68. Under this explanation, we should see stronger effects for those municipalities that are active in debt markets and those municipalities that are larger. We conduct cross-sectional tests where we separate our sample into groups based on either debt market activity or own county revenue. For both tests, we find incremental effects for both active debt and high revenue municipalities, wherein these entities reduce expenses more than either inactive debt or low revenue municipalities. Collectively, these findings suggest that the effects we document are partially driven by debt market forces.

2. Sample

Our analyses use financial statement data for a broad sample of local municipalities. Our sample consists of those municipalities that are included in the Census Bureau Survey of Annual Governments, and that either have a 2016 population in excess of 100,000 or are one of the three largest counties within a state. We require that the municipality be included in the Census Bureau Survey of Annual Governments because we use items from that data as outcome variables in our analyses.[1] We exclude counties in Connecticut, Massachusetts, Rhode Island, and Vermont since they do not have county-level governments.[2] These steps provide an initial sample of approximately 516 counties across 46 states.

We collect county-level financial statement data from either the Electronic Municipal Market Access database (EMMA) or the county's website to supplement our sample.[3] For each county in the sample, we hand-collect the following items for each of their defined benefit pension plans: the type of pension plan, the net pension liability, the covered payroll, and the actuarial and required pension plan contributions for the calendar years 2013 through 2016. Counties that participated in multi-employer state-sponsored pension plans (PMEPPs) were most directly affected by GASB 68 because they previously did not have to recognize or disclose any pension liabilities on their balance sheet or in their audit report. In contrast, counties that administered single employer pension plans, administered multi-employer pension plans, or participated in agent multi-employer plans were required to disclosure their pension obligation pre-GASB 68 in the supplemental reports included with their financial statements. We refer to these three alternative defined benefit pension plans as other pension plans (OPPs). In our hand-collection process, we classify each pension plan that a county participated/administered and

[1] The most recent financial reporting information is available for the 2016 fiscal year (county year-ends between July 1, 2015 and June 30, 2016).
[2] We also excluded the five boroughs on New York City since these counties did not have individual financial reports.
[3] In cases where we could not locate an annual audit report or a comprehensive annual financial report (CAFR) online, we contacted the county treasurer and requested an electronic copy.

aggregated the net pension liabilities of that plan as either PMEPPs or OPPs. We exclude fourteen counties that do not have defined benefit pension plans (i.e., counties with no pension plan or with a defined contribution plan), leaving us with a final sample of 502 counties.

We next match our Census Bureau revenues and expenses and hand-collected pension plan information with local government employment and unemployment data from the Bureau of Labor Statistics, county population, business establishments, poverty rates, county-square footage data from the Census Bureau, and personal income data from the Bureau of Economic Analysis. Appendix A provides a comprehensive description of the source documentation for each variable utilized in our empirical analysis. Our sample comprises of 1,669 county-year observations after eliminating those observations for which there is an incomplete set of control variables or missing revenues.[4]

3. Descriptive statistics

Table 1 shows that approximately 66% of our sample have a least one PMEPP whereas 53% have at least one OPP. Refining our sample requirements further shows that 47% of our sample exclusively employ PMEPPs, 34% use only OPPs, and the remainder have some combination of MEPPs and SEPPs. In dollar terms, the average county in our sample has an NPL equivalent to $270 per county resident, of which approximately half is attributable to PMEPPs (average *NPL per Capita* = 0.14). The average county in our sample generates approximately $686 million in revenues (untabulated). Focusing on revenues in which counties have some control over, we observe that their total tax revenues and fee revenues are $560 and $260 per resident in a given county. From an expense perspective, the average county in our sample incurs

[4] Note that the sample size for our multivariate specifications vary depending on the subset of pension plans we are investigating, as well as the availability of certain financial statement line items from the CB survey data.

total expenses of approximately $600 million (untabulated). The average county incurs salary expenditures of $440 and welfare expenditures of $130 per county resident. The CB Census of Governments does not include local county employment. Therefore, we measure local employment using the total number of employees working in public administration in each county (which could be employed at the Local, State, or Federal level), which averages 3,200 employees per county in our sample. In terms of county-level statistics, the average county has approximately 268,000 residents, 5,900 business establishments, unemployment rates of 6.4% and poverty rates of 14%. Approximately 40% of our sample counties generate annual expenses that exceed their revenues.

In Table 2 we provide differential comparisons between counties that only participate in PMEPPs (i.e., *PMEPP Only Ind.* =1) versus counties that only deploy OPPs (i.e., *OPP Only Ind.* = 1). We find that OPP Only counties incur larger NPLs per capita than PMEPP Only counties with $320 of NPLs per resident versus $250 NPLs per resident. Both types of pension plans are underfunded on average, with 96% of OPPs being underfunded versus 90% of PMEPPS being underfunded. Although revenues per capita are indistinguishable between our treatment and control groups, *OPP Only* counties incur higher salary and welfare expenses, have larger populations and more business establishments, and incur higher poverty and unemployment rates. These differences highlight the importance of controlling for the observable time varying-county characteristics in our subsequent analysis.

4. Research Design and Results

4.1. Identification

We utilize the adoption of GASB 68 to examine the real effects of financial statement disclosure for local governments. While this statement required the recognition and disclosure of the entities' net pension deficit, it did not apply uniformly across all entities. In particular, municipalities which participate in shared plans with their state (PMEPP) disclosed nothing in their financial reports with respect to pension liabilities prior to GASB 68. Rather, PMEPP's only disclosed pension obligations at the state level, even though each individual municipality is ultimately responsible for the future funding obligation. In contrast, municipalities with agency-type or self-administered plans (OPP) disclosed the net pension deficit pre-GASB 68 in the supplementary information in their annual reports. This difference in pre-GASB 68 reporting allows us to isolate the effect of financial statement disclosure by comparing the changes in several economic constructs for municipalities that participate in shared plans with those that participate in agency-type plans.

More specifically, we employ a difference-in-differences (DD) research design that compare economic outcomes for municipalities with PMEPP versus OPP arrangements. The economic outcomes we consider are broad measures of revenues, expenses and the number of employees. We analyze these variables because they broadly capture the economic behavior of the municipality. Conceptually, our use of municipalities with OPP allows us to control for general macroeconomic trends in revenues, expenses, and number of employees.

4.2. Multivariate analysis

We begin by limiting the sample to counties whose PMEPPs and OPPs have positive NPLs and examine changes in different revenues, expenses, and employment items between counties with a *PMEPP NPL* to counties with an *OPP NPL*.[5] We estimate the following

[5] Our results are qualitatively unchanged when we exclude counties with both PMEPP NPLs and OPP NPLs, which account to less than 20 percent of our sample.

regression:

$$County\_item_{i,t} = \beta_1 Post_{i,t} + \beta_2 Post_{i,t} \times PMEPP\ NPL_{i,t} + \beta_3 Population_{i,t} + \beta_4 Establishments_{i,t} + \beta_5 Personal\_Income_{i,t} + \beta_6 Unemployment\_Rate_{i,t} + \beta_7 Density_{i,t} + \beta_8 Poverty\_Rate_{i,t} + \beta_9 Loss_{i,t} + \phi_{County} + \varepsilon_{i,t} \quad (1)$$

where *County_item*$_{i,t}$ is one of the following five items for county *i* in year *t*: (1) tax revenues per capita; (2) fee revenue per capita; (3) salary expense per capita; (4) welfare expenditures per capita; and (5) the natural log of government employees. In addition, we include county-level fixed effects to mitigate concerns regarding unobservable differences between our PMEPP and OPP counties, and cluster standard errors by county. All variables are defined in Appendix A.

Columns (1) and (2) of Table 3 present results for our revenue items, tax revenues per capita and fee revenue per capita, respectively. Focusing on Column (1), the coefficient on *Post* (0.009) shows that tax revenue marginally increases in the period after the NPL recognition requirement. This coefficient is consistent with different tax revenue items increasing over time (e.g., property tax revenue). We find that the coefficient on our variable of interest *Post* × *PMEPP* is not significantly different from zero. In column (2), in which the dependent variables is fee revenue per capita, we find that the coefficients on both the *Post* and *Post* × *PMEPP* are not significantly different from zero. Collectively, the results in Columns (1) and (2) suggest that NPL recognition for PMEPP does not affect counties' decision to increase revenue.

Columns (3) and (4) report results for the salary expense per capita and the welfare expenditure per capita, respectively. We find that the coefficient on *Post* in both columns is positive and significant, indicating that salaries and welfare expenditure increase over time. However, the significant and negative coefficient on *Post* × *PMEPP* indicates that these expenses decrease in PMEPP municipalities relative to OPP municipalities. In Column (5),

where the dependent variable is the log of the number of employees, we find a negative and significant coefficient on *Post* × *PMEPP*, indicating that PMEPP municipalities reduce headcount post-GASB 68 relative to OPP municipalities. We attribute this reduction to NPL recognition of PMEPP rather than NPL recognition of OPP.

Next, we limit the sample to counties whose pension plans have a negative net pension liability (i.e., net pension assets, NPA) and examine changes in revenues, expenses, and number of employees between counties with PMEPP NPAs to counties with OPP NPAs. We then re-estimate equation (1) for this sample. Table 4 reports the results of this regression. With respect to our variable of interest, we find a positive and significant coefficient only in Column (3), indicating that salary expense per capita *goes up* after the NPL recognition but only for counties with PMEPPs.[6] This result provides for the effect of NPL recognition on expenses in counties with defined benefit pension plans who did not disclose NPL in their CAFR prior to GASB 68.

Overall, the results in Table 3 and Table 4 provide strong evidence that the new disclosure and recognition requirements under GASB 68 had real effects on municipal operations. In particular, for those municipalities where GASB 68 generated an asset, we observe an increase in expenses suggesting that the municipalities were behaving as if they had additional resources. In contrast, for those municipalities where GASB 68 generated a liability, we observe a decrease in expenses suggesting that the municipalities were behaving as if they had fewer resources.

In Table 5, we report the results from re-estimating equation (1) using a continuous measure of pension liability, *PMEPP NPL per Capita*$_{i,t}$, in place of the *PMEPP* indicator and require county years to have a positive NPL to be included in the sample. Consistent with the results in

[6] Our coefficient on *Post* × *PMEPP NPA* is no longer significant when we exclude counties with both MEPP and OPP. This might be due to small number of observations, given that the sample size drops to 67 county-years in some specifications.

Tables (3) and (4), we find a significant and negative coefficient on *Post* × *PMEPP NPL per Capita* in columns (3) and (4), providing evidence that counties reduce their salary expenses and welfare expenditures when they have to recognize NPLs after disclosing their pension obligations for the first time. In terms of economic significance, a standard deviation increase in a PMEPP NPL leads an approximate 12% (2%) decline in salary expenses (welfare expenditures) once net pension liabilities are disclosed and simultaneously recognized on municipalities financial statements through GASB 68.

4.3. Cross-sectional analyses

Next, we explore cross-sectional variations in the relationship between the GASB 68 rule change and county items to help ensure our results are attributable to NPL recognition of PMEPP. First, following prior literature that provides evidence of earnings management around equity offerings and debt issuance, we expect NPL recognition to have a greater effect on municipalities' activities in counties that are more likely to issue debt (Teoh, Wang, and Rao, 1998; Rangan, 1998; DuCharme, Malatesta, and Sefiek, 2004; Liu, Ning, Davidson, 2010). Second, we consider the size of the municipality. Larger municipalities should have more flexibility in their budget, especially in terms of welfare expenses and employment.

To test these cross-sectional conjectures, we calculate the average debt issuance (total revenue) per capita for each county *i* over our sample period. We then construct an indicator variable, $High\_Debt_i$ ($High\_Revenue_i$), which equals one if the county's average debt issuance (total revenue) is above the sample median, and zero otherwise. We then limit the sample to counties whose pension plans have positive NPL and estimate the following regression:

$$County\_measure_{i,t} = \beta_1 Post_{i,t} + \beta_2 Post_{i,t} \times PMEPP\ NPL_{i,t} + \beta_3 Post_{i,t} \times \quad (2)$$
$$Var_i + \beta_4 Post_{i,t} \times Var_i \times PMEPP\ NPL_{i,t} + \beta_5 Population_{i,t} + \beta_6 Establishments_{i,t} +$$

$$\beta_7 Personal\ Income_{i,t} + \beta_8 Unemployment\_Rate_{i,t} + \beta_9 Density_{i,t} +$$

$$\beta_{10} Poverty\_Rate_{i,t} + \beta_{11} Loss_{i,t} + \phi County + \varepsilon_{i,t}$$

where Var_i is either $High\_Debt_i$ or $High\_Revenue_i$. Here our coefficient of interest is β_3, which captures the differential response to GASB 68 for debt issuing municipalities in our sample. Panels A and B of Table 6 report the results of this regression for $High\_Debt_i$ and $High\_Revenue_i$, respectively. As shown in Panel A, consistent with our results in the prior sub-section, we find a negative and significant coefficient on *Post* × *PMEPP* in columns (3) and (4), confirming that salary expense and welfare expenditure decrease following the recognition of NPL. Focusing on column (3), we find a positive and significant coefficient on *Post* × *High_Debt*, suggesting that counties that issue more debt tend to spend some of these funds on salaries. With respect to our variable of interest, we find that the decline in salary expense in the post-recognition period is greater for *High_Debt* counties with PMEPP than other *High_Debt* counties.

Moving to Panel B, we find similar results. Specifically, we find a positive and significant coefficient on *Post* × *High_Revenue*, in columns (1), (3), and (4), suggesting that counties that have more revenue, are both able to charge more in tax revenue but also tend spend some of these proceeds on salaries and welfare. This is consistent with richer municipalities both charge more from their residents but also provide more amenities and services than poorer municipalities. With respect to our variable of interest, we find a greater decline in salary and welfare expense in the post-recognition period for *High_Revenue* counties with PMEPP than other *High_Revenue* counties. Overall, the results of Table 6 provide further support the idea that the recognition of NPL for counties with PMEPP who did not have to disclose their NPL prior to GASB 68 has a real effect on counties.

Table 1
Descriptive Statistics

This table provides the descriptive statistics for the variables used in the paper. The sample includes county fiscal year-ends between June 30, 2013 through June 30, 2016. Variable definitions are provided in Appendix A.

	N	Q1	Mean	Median	Q3	σ
PMEPP Ind.	1,669	0.00	0.66	1.00	1.00	0.47
OPP Ind.	1,669	0.00	0.53	1.00	1.00	0.50
PMEPP Only Ind.	1,669	0.00	0.47	0.00	1.00	0.50
OPP Only Ind.	1,669	0.00	0.34	0.00	1.00	0.47
PMEPP & OPP Ind.	1,669	0.00	0.20	0.00	0.00	0.40
PMEPP NPA	1,669	0.00	0.53	1.00	1.00	0.50
PMEPP NPL	1,669	0.00	0.13	0.00	0.00	0.34
OPP NPL	1,669	0.00	0.49	0.00	1.00	0.50
OPP NPA	1,669	0.00	0.04	0.00	0.00	0.20
PMEPP NPL per Capita	1,669	0.00	0.14	0.01	0.25	0.22
NPL per Capita	1,669	0.05	0.27	0.16	0.35	0.36
Post	1,669	0.00	0.41	0.00	1.00	0.49
Tax Revenues per Capita	1,669	0.28	0.56	0.40	0.66	0.46
Fee Revenue per Capita	1,660	0.08	0.26	0.14	0.26	0.40
Salary Expenses per Capita	1,459	0.17	0.44	0.26	0.47	0.49
Welfare Expenditures per Capita	1,504	0.01	0.13	0.06	0.20	0.16
Ln(Govt. Employees)	1,577	7.46	8.09	7.94	8.57	0.85
Hi Debt	1,669	0.00	0.50	1.00	1.00	0.50
Hi Revenue	1,669	0.00	0.52	1.00	1.00	0.50
Population	1,669	11.86	12.50	12.28	13.00	0.83
Establishments	1,669	8.00	8.69	8.53	9.30	0.90
Personal Income	1,669	10.51	10.66	10.64	10.78	0.22
Unemployment Rate	1,669	5.00	6.44	6.10	7.40	2.05
Density	1,669	195.85	635.88	342.91	666.20	863.22
Poverty Rate	1,669	10.50	13.95	13.80	17.10	4.88
Loss	1,669	0.00	0.40	0.00	1.00	0.49

Table 2
Descriptive Statistics by Plan Type

This table provides descriptive statistics for the variables used in the paper for counties with either only *PMEPPs* or *OPP*s. All variables are defined in Appendix A. The sample includes county fiscal year ends June 30, 2013 through June 30, 2016. We compare the means across *PMEPP Only* and *OPP Only* counties and cluster standard errors by county, and ***, **, and * signify statistical significance at the 1%, 5%, and 10% levels, respectively.

	PMEPP Only Ind. = 1			**OPP Only Ind. = 1**			
Variable	**N**	**Mean**	**Median**	**N**	**Mean**	**Median**	
PMEPP Only Ind.	781	1	1	561	0	0	N/A
OPP Only Ind.	781	0	0	561	1	1	N/A
PMEPP NPL	781	0.9	1	561	0.96	1	***
NPL per Capita	781	0.25	0.22	561	0.32	0.14	**
Post	781	0.38	0	561	0.4	0	**
Tax Revenues per Capita	781	0.51	0.41	561	0.47	0.32	
Fee Revenue per Capita	777	0.21	0.14	559	0.2	0.13	
Salary Expenses per Capita	607	0.31	0.25	535	0.37	0.22	*
Welfare Expenditures per Capita	686	0.11	0.05	528	0.18	0.07	***
Ln(Govt. Employees)	754	7.98	7.85	531	8.25	8.1	***
Hi Debt	781	0.48	0	561	0.41	0	
Hi Revenue	781	0.44	0	561	0.49	0	
Population	781	12.35	12.18	561	12.74	12.55	***
Establishments	781	8.59	8.43	561	8.89	8.73	***
Personal Income	781	10.67	10.64	561	10.68	10.65	
Unemployment Rate	781	6	5.8	561	6.81	6.4	***
Density	781	563.54	296.92	561	776.26	396.56	**
Poverty Rate	781	13.34	13.2	561	14.33	14.2	*
Loss	781	0.45	0	561	0.33	0	***

Table 3
Difference in Difference with Net Pension Liabilities

This table examines the relation between net pension liability (NPL) recognition and different economic outcomes for counties. The sample includes county fiscal year ends June 30, 2013 through June 30, 2016 and is limited to counties who either have PMEPP or OPP NPLs measured as of fiscal year 2015. The variable of interest is *Post* × *PMEPP NPL*. *Post* is an indicator equal to one after 2015. *PMEPP NPL* is an indicator equal to one for counties with a *PMEPP NPL* and 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers. All variables are defined in Appendix A. Each model includes county fixed effects. Below each coefficient value is the corresponding t-statistic computed based on standard errors adjusted for clustering at the county level. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

	(1) Tax Revenues per Capita	(2) Fee Revenue per Capita	(3) Salary Expenses per Capita	(4) Welfare Expenditures per Capita	(5) Ln(Govt. Employees)
Post	0.009*	-0.001	0.083***	0.005**	0.003
	(1.82)	(-0.12)	(4.09)	(2.25)	(0.94)
Post* × *PMEPP NPL	**-0.001**	**-0.009**	**-0.131*** **	**-0.008*** **	**-0.007** **
	(-0.11)	**(-0.79)**	**(-4.74)**	**(-3.13)**	**(-2.02)**
Population	0.131	-0.505	1.110	0.021	0.327*
	(0.44)	(-1.01)	(1.12)	(0.24)	(1.86)
Establishments	0.120	0.149	0.175	-0.035	0.245*
	(0.60)	(0.35)	(0.22)	(-0.49)	(1.93)
Personal Income	0.024	0.110	0.627*	-0.001	0.011
	(0.38)	(0.95)	(1.85)	(-0.05)	(0.18)
Unemployment Rate	-0.009***	-0.008	0.009	-0.000	-0.001
	(-3.78)	(-1.56)	(0.74)	(-0.30)	(-0.76)
Density	-0.000	0.000*	-0.003***	-0.000	0.000
	(-0.72)	(1.69)	(-3.29)	(-0.93)	(0.34)
Poverty Rate	-0.002	-0.002	0.006	-0.001	-0.001
	(-1.50)	(-0.71)	(1.12)	(-1.18)	(-1.35)
Loss	-0.017***	-0.010*	-0.031	-0.000	-0.000
	(-2.82)	(-1.85)	(-1.54)	(-0.04)	(-0.12)
Adj. R-squared	0.991	0.934	0.859	0.987	0.999
Observations	1,540	1,530	1,318	1,378	1,443

Table 4
Difference in Difference with Net Pension Assets

This table examines the relation between net pension assets (NPA) recognition and different economic outcomes for counties. The sample includes county fiscal year ends June 30, 2013 through June 30, 2016 and is limited to counties who either have PMEPP or OPP net pension assets measured as of fiscal year 2015. The variable of interest is *Post X PMEPPNPA.* Post is an indicator equal to one after 2015. *PMEPP* is an indicator equal to one for counties with a PMEPP NPA and zero otherwise. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers. All variables are defined in Appendix A. Each model includes county fixed effects. Below each coefficient value is the corresponding t-statistic computed based on standard errors adjusted for clustering at the county level. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

	(1) Tax Revenues per Capita	(2) Fee Revenue per Capita	(3) Salary Expenses per Capita	(4) Welfare Expenditures per Capita	(5) Ln(Govt. Employees)
Post	0.008	-0.063	-0.109	0.002	0.009
	(0.54)	(-1.26)	(-1.11)	(0.37)	(0.97)
Post × PMEPP NPA	**-0.001**	**0.017**	**0.216****	**-0.001**	**0.006**
	(-0.08)	**(0.45)**	**(2.29)**	**(-0.26)**	**(0.56)**
Population	0.065	0.075	-1.942	-0.181**	0.201
	(0.14)	(0.03)	(-0.59)	(-2.54)	(0.79)
Establishments	-0.156	-2.291	-1.074	0.028	0.237
	(-0.36)	(-0.95)	(-0.29)	(0.33)	(0.88)
Personal Income	-0.034	1.175	2.851*	0.043	-0.071
	(-0.23)	(1.43)	(1.82)	(1.18)	(-0.99)
Unemployment Rate	-0.011**	-0.018	-0.023	-0.003**	0.001
	(-2.17)	(-0.66)	(-0.47)	(-2.42)	(0.46)
Density	0.000	0.001	-0.003	0.000	0.000
	(0.70)	(0.79)	(-0.76)	(1.43)	(1.57)
Poverty Rate	-0.006*	0.003	0.006	0.001	0.001
	(-1.93)	(0.26)	(0.24)	(0.57)	(0.42)
Loss	-0.014	-0.003	-0.015	0.003	-0.005
	(-0.76)	(-0.12)	(-0.17)	(1.49)	(-1.03)
Adj. R-squared	0.980	0.885	0.726	0.996	0.999
Observations	265	262	228	237	253

Table 5
Difference in Difference with continuous Net Pension Liability measure

This table examines the relation between net pension liability recognition and different economic outcomes for counties. The sample includes county fiscal year ends June 30, 2013 through June 30, 2016 and is limited to counties that have a PMEPP. The variable of interest is *Post* × *PMEPP NPL per Capita*. *Post* is an indicator equal to one after 2015. *PMEPP NPL per Capita* is the county's net pension liability (in thousands) from their PMEPPs for fiscal years ending June 30, 2015 to May 31, 2016 scaled by the county's population estimate for June 30, 2015. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers. All variables are defined in Appendix A. Each model includes county fixed effects. Below each coefficient value is the corresponding t-statistic computed based on standard errors adjusted for clustering at the county level. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

	(1) Tax Revenues per Capita	(2) Fee Revenue per Capita	(3) Salary Expenses per Capita	(4) Welfare Expenditures per Capita	(5) Ln(Govt. Employees)
Post	0.012*	0.008	0.047**	0.002	0.003
	(1.70)	(0.74)	(2.41)	(0.94)	(1.13)
Post* × *PMEPP	**-0.006**	**-0.045**	**-0.269*** **	**-0.010*** **	**-0.008**
NPL per Capita	**(-0.37)**	**(-1.43)**	**(-3.79)**	**(-2.66)**	**(-1.17)**
Population	-0.035	-0.205	0.734	0.107	0.332
	(-0.11)	(-0.32)	(0.68)	(1.02)	(1.64)
Establishments	0.132	-0.245	-0.738	-0.176*	0.227
	(0.51)	(-0.39)	(-0.64)	(-1.74)	(1.49)
Personal Income	-0.052	0.114	0.530	-0.009	0.013
	(-0.65)	(0.71)	(1.28)	(-0.36)	(0.19)
Unemployment Rate	-0.011***	-0.006	-0.016	0.000	0.002
	(-3.13)	(-0.61)	(-0.89)	(0.08)	(0.73)
Density	0.000	0.000	-0.002*	0.000	0.000
	(0.35)	(0.79)	(-1.68)	(0.90)	(0.41)
Poverty Rate	-0.001	-0.003	0.007	-0.001	-0.002
	(-0.81)	(-0.75)	(0.90)	(-0.88)	(-1.21)
Loss	-0.017**	-0.009	-0.034	-0.001	0.002
	(-2.09)	(-1.27)	(-1.16)	(-0.36)	(0.58)
Adj. R-squared	0.987	0.933	0.851	0.978	0.999
Observations	1,108	1,100	880	969	1,042

Table 6
Cross-Section Variation in Effect of Net Pension Liability

This table examines the cross-sectional variation in the relation between net pension liability recognition and different economic outcomes for counties. The sample includes county fiscal year ends June 30, 2013 through June 30, 2016 and is limited to counties who either have PMEPP or OPP net pension liabilities measured as of fiscal year 2015. In Panel A, the interaction of interest is *Post* × *PMEPP* × *Hi Debt*. *Post* is an indicator equal to one after 2015. *PMEPP* is an indicator equal to one for counties with a PMEPP NPL. *Hi Debt* is an indicator variable equal to one when a county's average debt issuance per capita over our sample period is above the median county debt issuance per capita, and is equal to zero otherwise. In Panel B, the interaction of interest is *Post* × *PMEPP* × *Hi Revenue*. *Hi Revenue* is an indicator variable equal to 1 when a county's total revenue per capita over our sample is above the median county total revenue per capita and is equal to zero otherwise. All continuous variables are winsorized at the 1st and 99th percentiles to mitigate the impact of outliers. All variables are defined in Appendix A. Each model includes county fixed effects. Below each coefficient value is the corresponding t-statistic computed based on standard errors adjusted for clustering at the county level. ***, **, and * denote significance at the 1%, 5%, and 10% levels for two-tailed tests, respectively.

Table 6 (continued)

Panel A: Cross Section Variation with Debt Issuance

	(1) Tax Revenues per Capita	(2) Fee Revenue per Capita	(3) Salary Expenses per Capita	(4) Welfare Expenditures per Capita	(5) Ln(Govt. Employees)
Post	0.000	-0.008	0.018	0.005*	0.002
	(0.10)	(-0.90)	(0.77)	(1.70)	(0.53)
Post × Hi Debt × PMEPP NPL	**0.003**	**-0.015**	**-0.140****	**0.004**	**-0.003**
	(0.21)	**(-0.65)**	**(-2.53)**	**(0.85)**	**(-0.41)**
Post × Hi Debt	0.018**	0.014	0.139***	0.001	0.002
	(2.25)	(0.60)	(2.64)	(0.27)	(0.34)
Post × PMEPP NPL	**-0.002**	**-0.001**	**-0.063*****	**-0.010*****	**-0.006**
	(-0.34)	**(-0.11)**	**(-2.98)**	**(-2.62)**	**(-1.09)**
Population	0.089	-0.515	0.968	0.013	0.326*
	(0.31)	(-1.03)	(1.00)	(0.16)	(1.86)
Establishments	0.127	0.157	0.257	-0.034	0.247*
	(0.65)	(0.37)	(0.33)	(-0.48)	(1.94)
Personal Income	0.039	0.112	0.658*	0.000	0.011
	(0.62)	(0.94)	(1.89)	(0.02)	(0.17)
Unemployment Rate	-0.009***	-0.008	0.010	-0.000	-0.001
	(-3.72)	(-1.58)	(0.85)	(-0.30)	(-0.76)
Density	-0.000	0.000	-0.003***	-0.000	0.000
	(-1.17)	(1.46)	(-3.62)	(-1.09)	(0.34)
Poverty Rate	-0.002	-0.002	0.005	-0.001	-0.001
	(-1.64)	(-0.75)	(0.95)	(-1.22)	(-1.36)
Loss	-0.017***	-0.010*	-0.031	0.000	-0.000
	(-2.75)	(-1.87)	(-1.54)	(0.05)	(-0.13)
Adj. R-squared	0.991	0.934	0.862	0.987	0.999
Observations	1,540	1,530	1,318	1,378	1,443

Table 6 (continued)

Panel B: Cross Section Variation with County Size

	(1) Tax Revenues per Capita	(2) Fee Revenue per Capita	(3) Salary Expenses per Capita	(4) Welfare Expenditures per Capita	(5) Ln(Govt. Employees)
Post	-0.002	-0.013*	0.007	-0.000	-0.001
	(-0.48)	(-1.80)	(0.49)	(-0.15)	(-0.27)
Post × Hi Revenue × PMEPP NPL	**0.005**	**-0.024**	**-0.153*** **	**-0.015*** **	**-0.009**
	(0.46)	**(-1.20)**	**(-3.20)**	**(-3.15)**	**(-1.23)**
Post × Hi Revenue	0.022***	0.023	0.151***	0.010***	0.008
	(3.18)	(1.28)	(3.49)	(3.31)	(1.41)
Post × PMEPP NPL	**-0.002**	**0.005**	**-0.046*** **	**0.000**	**-0.002**
	(-0.34)	**(1.02)**	**(-3.80)**	**(0.01)**	**(-0.45)**
Population	0.194	-0.528	0.918	-0.002	0.311*
	(0.63)	(-1.05)	(0.92)	(-0.02)	(1.78)
Establishments	0.143	0.194	0.492	-0.014	0.262**
	(0.73)	(0.47)	(0.64)	(-0.20)	(2.04)
Personal Income	0.015	0.110	0.633*	0.002	0.012
	(0.24)	(0.95)	(1.89)	(0.07)	(0.19)
Unemployment Rate	-0.008***	-0.007	0.015	0.000	-0.001
	(-3.33)	(-1.48)	(1.30)	(0.07)	(-0.59)
Density	-0.000	0.000	-0.003***	-0.000	0.000
	(-1.43)	(1.39)	(-3.48)	(-0.96)	(0.28)
Poverty Rate	-0.002*	-0.002	0.007	-0.000	-0.001
	(-1.79)	(-0.67)	(1.16)	(-1.01)	(-1.30)
Loss	-0.017***	-0.010*	-0.033	-0.000	-0.000
	(-2.83)	(-1.88)	(-1.63)	(-0.18)	(-0.14)
Adj. R-squared	0.991	0.934	0.862	0.987	0.999
Observations	1,540	1,530	1,318	1,378	1,443

Appendix A
Variable Definitions

This appendix describes the construction of our variables used in this analysis, and we note the source documentation in parentheses.

Pension Plan Variables:

PMEPP Ind.	An indicator variable equal to one if a county participates in a multi-employer pension plan (PMEPP), and zero otherwise (source: EMMA, County Websites).
OPP Ind.	An indicator variable equal to one if a county administers a single employer pension plan, administers a multi-employer pension plan, or participates in an agent plan (i.e., OPP), and zero otherwise (source: EMMA, County Websites).
PMEPP Only Ind.	An indicator variable equal to one if a county only has a PMEPP, and zero otherwise (source: EMMA, County Websites).
OPP Only Ind.	An indicator variable equal to one if a county only has an OPP, and zero otherwise (EMMA, County Websites).
PMEPP and OPP Ind.	An indicator variable equal to one if a county has both a PMEPP and an OPP, and zero otherwise (EMMA, County Websites).
PMEPP NPL	An indicator variable equal to one if a county PMEPPs report a net pension liability for fiscal years ending June 30, 2015 to May 31, 2016, and zero otherwise (EMMA, County Websites).
PMEPP NPA	An indicator variable equal to one if a county PMEPPs report a negative net pension liability (i.e., net pension asset) for fiscal years ending June 30, 2015 to May 31, 2016, and zero otherwise (EMMA, County Websites).
PMEPP NPL per Capita	The county's net pension liability (in thousands) from their PMEPPs for fiscal years ending June 30, 2015 to May 31, 2016 scaled by the population estimate for June 30, 2015 (EMMA, County Websites, Census Bureau County Population Totals).
NPL per Capita	The county's total pension liability (in thousands) from their pension plans for fiscal years ending June 30, 2015 to May 31, 2016 scaled by the population estimate for June 30, 2015 (EMMA, County Websites, Census Bureau County Population Totals).

Modifying Variables:

Post	An indicator variable equal to one for fiscal years ending after June 30, 2015, and zero otherwise.
High Debt	An indicator variable equal to one when a county's average debt issuance per capita over our sample period is above the median county debt issuance per capita, and is equal to zero otherwise (Census Bureau, Annual Survey of State and Local Government Finances: Categories "29U", "24T", Census Bureau County Population Totals).
Hi Revenue	An indicator variable equal to 1 when a county's total revenue per capita over our sample is above the median county total revenue per capita and is equal to zero otherwise (Census Bureau, Annual Survey of State and Local Government Finances: Categories "A"-"D", "T", "X01", "X05", "X08", "Y01", "Y02", "Y04", Census Bureau County Population Totals).

Outcome Variables:

Tax Revenues per Capita	The tax revenues in dollars collected by the county scaled by the county population estimate (Census Bureau, Annual Survey of State and Local Government Finances: Category "T", Census Bureau County Population Totals).
Fee Revenue per Capita	The charge revenues (e.g., utility fees, liquor license fees, insurance fees) in dollars collected by the county scaled by the county population estimate (Census Bureau, Annual Survey of State and Local Government Finances: Category "A", Census Bureau County Population Totals).
Salary Expenses per Capita	Salary and wage expenses incurred by the county scaled by the county population estimate (Census Bureau, Annual Survey of State and Local Government Finances: Category "Z00", Census Bureau County Population Totals).
Welfare Expenses per Capita	Welfare expenses incurred by the county scaled by the county population estimate (Census Bureau, Annual Survey of State and Local Government Finances: Categories "J67-J68", "E74-E75", "E77", "F77", "G77", "E79", "F79", and "J79", Census Bureau County Population Totals).
Ln(Govt. Employees)	The natural log of the number of full and part-time employees working in NAICS 92, Public Administration a county measured as of June 30th in each year (Bureau of Labor Statistics, QCEW).

Control Variables:

Population	The natural log of the estimated county population as of June 30th in each county-year (Census Bureau County Population Totals).
Establishments	The natural log of the lagged number of business establishments in the prior year (Census Bureau, County Business Patterns).
Personal_Income	The natural log of the county income per capita for a county in the prior calendar year (Bureau of Economic Analysis).
Unemployment_Rate	The average unemployment rate in percentage terms for a county in the prior calendar year (Bureau of Labor Statistics, Local Area Unemployment).
Density	The county population estimate scaled by the area in square miles of land as of June 30th in each county-year (Census Bureau County Population Totals, 2010 Census Bureau Survey on Square Footage).
Poverty_Rate	The poverty rate as of June 30th of each county-year (Census Bureau, SAIPE).
Loss	An indicator equal to one when a county's expenditures exceed their costs for a given county-year, and zero otherwise (Census Bureau, Annual Survey of State and Local Government Finances).